

## CONTRIBUTORS TO THIS ISSUE

**John Andrews**, B.S., 1958, Houghton College; Ph.D. (Solid State Physics), 1963, Massachusetts Institute of Technology; Research Associate, Massachusetts Institute of Technology, 1963-1966; Bell Laboratories, 1966—. The subject of Mr. Andrews' doctoral thesis was ultrasonic attenuation in superconductors at radio and microwave frequencies. After coming to Bell Laboratories, he worked on laser mixing in nonlinear optical crystals. Next, he investigated ohmic and rectifying metal-semiconductor contacts formed by metallurgical reaction between transition metals and silicon. From 1970 to 1976 he worked with Western Electric engineers at Allentown on silicon integrated circuit manufacture. Since 1976 he has been associated with the Advanced LSI Development Laboratory at Murray Hill, investigating new materials and special processes for fine-line VLSI technology. Senior Member, IEEE; member APS, ECS, and TMS-AIME; associate editor, *Materials Letters*.

**O'Connell J. Benjamin**, B.S.E.E., 1976, Polytechnic Institute of Brooklyn; graduate studies, 1977-1982, Polytechnic Institute of New York; Bell Laboratories, 1973—. Mr. Benjamin has been involved with research in digital MF receivers, voiceband codecs, and, presently, he is working on computer communications.

**G. Samuel Brockway**, B.S.C.E., 1966, University of Miami; M.S.E.M., 1968, Georgia Institute of Technology; Ph.D. (Applied Mechanics), 1972, California Institute of Technology; Bell Laboratories, 1976-1981. Mr. Brockway has worked extensively in such areas of mechanics as elasticity, viscoelasticity, and fracture mechanics, and in the development of plastics for use in fiber optics. He is presently president of Plastics Engineering Consultants.

**James C. Candy**, B.Sc. and Ph.D. (Engineering), University of Wales, Bangor, in 1951 and 1954, respectively; Bell Laboratories, 1961—. From 1954 to 1956 Mr. Candy was with S. Smith and Sons, Guided Weapons Department, Cheltenham, and for the next four years he worked on nuclear instrumentation at the Atomic Energy Research Establishment, Harwell. In 1959 Mr. Candy went to the United States to take up an appointment as a Research Associate at the University of Minnesota, and a year later he joined Bell Laboratories, Holmdel, NJ, where he has investigated digital circuits and the efficient transmission of video signals. He is now concerned with techniques for converting signals between analog and digital formats.

**Stephen E. Levinson**, B.A. (Engineering Sciences), 1966, Harvard; M.S. and Ph.D. (Electrical Engineering), University of Rhode Island, Kingston, Rhode Island, 1972 and 1974, respectively; General Dynamics, 1966-1969; Yale University, 1974-1976; Bell Laboratories, 1976—. From 1966 to 1969, Mr. Levinson was a design engineer at Electric Boat Division of General Dynamics in Groton, Connecticut. From 1974 to 1976, he held a J. Willard Gibbs Instructorship in Computer Science at Yale University. In 1976, he joined the technical staff at Bell Laboratories, where he is pursuing research in the areas of speech recognition and cybernetics. Member, Association for Computing Machinery, Acoustical Society of America, editorial board of *Speech Technology*; associate editor, *IEEE Transactions on Acoustics, Speech and Signal Processing*.

**Lawrence R. Rabiner**, S.B. and S.M., 1964, Ph.D. (Electrical Engineering), The Massachusetts Institute of Technology; Bell Laboratories, 1962—. From 1962 through 1964, Mr. Rabiner participated in the cooperative plan in electrical engineering at Bell Laboratories. He worked on digital circuitry, military communications problems, and problems in binaural hearing. Presently, he is engaged in research on speech communications and digital signal processing techniques. He is coauthor of *Theory and Application of Digital Signal Processing* (Prentice-Hall, 1975) and *Digital Processing of Speech Signals* (Prentice-Hall, 1978). Former President, IEEE, ASSP Society; former Associate Editor, ASSP Transactions; former member, Technical Committee on Speech Communication of the Acoustical Society, ASSP Technical Committee on Speech Communication; Member, IEEE Proceedings Editorial Board, Eta Kappa Nu, Sigma Xi, Tau Beta Pi. Fellow, Acoustical Society of America, IEEE.

**Adel A. M. Saleh**, B.Sc. (Electrical Engineering), 1963, University of Alexandria, Alexandria, Egypt; M.S. and Ph.D. (Electrical Engineering) Massachusetts Institute of Technology, Cambridge, MA, 1967 and 1970, respectively; Bell Laboratories, 1970—. From 1963 to 1965 Mr. Saleh worked as an instructor at the University of Alexandria. At Bell Laboratories he is engaged in research on microwave circuits, components, and communication systems. Senior Member, IEEE; member, Sigma Xi.

**Jack Salz**, B.S.E.E., 1955, M.S.E., 1956, and Ph.D., 1961, University of Florida; Bell Laboratories, 1961—. Mr. Salz first worked on remote line concentrators for the electronic switching system. Since 1968 he has supervised a group engaged in theoretical studies in data commu-

nications and is currently a member of the Communications Methods Research Department. During the academic year 1967-68, he was on leave as Professor of Electrical Engineering at the University of Florida. In Spring 1981, he was a visiting lecturer at Stanford University. Member, Sigma Xi.

**Manuel R. Santana**, B.Sc. (Electrical Engineering), 1970, University of Hartford; M.S., (Electrical Engineering), 1971, Georgia Institute of Technology; Bell Laboratories, 1970—. Mr. Santana has worked on the development of multipair cable and in the design, analysis, and testing of lightguide cable. He is presently Supervisor of the Lightguide Cable Group. Member, IEEE, Kappa Mu.

**Man Mohan Sondhi**, B.Sc. (Physics), Honours degree, 1950, Delhi University, Delhi, India, D.I.I.Sc. (Communications Engineering), 1953, Indian Institute of Science, Bangalore, India; M.S., 1955; Ph.D. (Electrical Engineering), 1957, University of Wisconsin, Madison, Wisconsin; Bell Laboratories, 1962—. Before joining Bell Laboratories, Mr. Sondhi worked for a year at the Central Electronics Engineering Research Institute, Pilani, India and taught for a year at the University of Toronto. At Bell Laboratories his research has included work on speech signal processing, echo cancellation, adaptive filtering, modeling of auditory and visual processes, and acoustical inverse problems. From 1971 to 1972 Mr. Sondhi was a guest scientist at the Royal Institute of Technology, Stockholm, Sweden.

